

August 13, 2010

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	Docket Nos. 50-282-LR
Northern States Power Co.	)	50-306-LR
	)	
(Prairie Island Nuclear Generating Plant,	)	ASLBP No. 08-871-01-LR
Units 1 and 2)	)	

**NSPM’S SUPPLEMENTAL STATEMENT OF POSITION ON  
SAFETY CULTURE CONTENTION**

Pursuant to 10 C.F.R. § 2.1207(a)(1) and the Atomic Safety and Licensing Board’s (“Board”) Memorandum and Order (Summarizing Prehearing Conference Call and Amending Hearing Schedule) (April 20, 2010) Northern States Power Company, a Minnesota corporation (“NSPM”) hereby submits its Supplemental Statement of Position (“Supplemental Statement”) on the Prairie Island Indian Community’s (“PIIC”) Safety Culture Contention (“Safety Culture Contention”). This Statement is supported by the “Rebuttal Testimony of Steven C. Skoyen on Safety Culture Contention” (“Skoyen Rebuttal”) and exhibits thereto, and the “Joint Rebuttal Testimony of Scott Northard, Kurt W. Petersen and Ed M. Peterson II on Safety Culture Contention” (“Northard Rebuttal”) and exhibits thereto.

**I. INTRODUCTION**

In this Supplemental Statement, NPSM supplements the positions set forth in its “Initial Statement of Position” (“Initial Statement”) submitted on July 30, 2010 by responding to the factual assertions, claims and conclusions contained in the “Direct Testimony of Christopher I. Grimes” (“Mr. Grimes’ testimony”) and the “Prairie Island Indian Community Initial Statement of Position on Safety Culture Contention” (“PIIC SOP”), both submitted by the Prairie Island Indian Community (“PIIC”) in this proceeding on July 30, 2010.

The supplemental facts, testimony and evidence relating to the Safety Culture Contention are described below.

## **II. LEGAL STANDARDS**

The legal standards that apply to this proceeding are described in NSPM's Initial Statement and need not be repeated here.

## **III. SUPPLEMENTAL STATEMENT OF POSITION ON FACTUAL ISSUES RELATING TO SAFETY CULTURE CONTENTION**

### **A. NSPM's Rebuttal Witnesses on Safety Culture Contention**

NSPM's testimony on the Safety Culture Contention will be presented by the same witnesses that provided direct testimony in NSPM's Initial Submittals of July 30, 2010. Mr. Steven C. Skoyen will testify on the refueling cavity leakage aspect of the Safety Culture Contention. Messrs. Scott D. Northard, Kurt W. Petersen and Ed M. Peterson II will testify as a panel on all other aspects of the Safety Culture Contention. As demonstrated in their direct testimony, Messrs. Skoyen, Northard, Petersen and Peterson have ample qualifications and experience in areas relating to the Safety Culture Contention herein, and are well qualified to offer testimony on this contention based on both their technical expertise and their first hand knowledge of the issues raised in the contention.

### **B. Refueling Cavity Leakage**

151. In Mr. Grimes' testimony (A19 at 7), the witness makes repeated reference to testimony presented and discussions that transpired during a meeting of the Subcommittee on License Renewal of the Advisory Committee on Reactor Safeguards ("ACRS") that took place on July 7, 2009. Mr. Grimes cites statements out of context and provides misleading quotes from the testimony and comments from witnesses and ACRS members. In so doing, he presents an incorrect portrayal of the status of the refueling cavity leakage issue, both at the time of the ACRS meeting over a year ago and at the present time. Skoyen Rebuttal at A7.

152. First, it is incorrect to assert that "the applicant's expert also noted that although there was not any evidence of the leak prior to 1987, they assume that leakage has been going

on for the entire life of the plant.” The testimony at the ACRS meeting explained that in performing engineering evaluations of potential degradation of the steel containment vessel, the concrete, and the rebar, NSPM assumed for calculation purposes that the leakage had occurred for the entire plant life. This theoretical assumption was made for the purpose of conservatively estimating the maximum potential degradation that may have affected these structures. In reality, there is no documentation of refueling cavity leakage at PINGP prior to 1987. Id. at A8 and Skoyen Exhibit 16 (ACRS July 2009 Meeting Transcript) at 48.

153. Second, it is misleading to claim that although NSPM “had tried to fix this leak several times, its efforts had not been successful.” As stated at the ACRS meeting, the coating and caulking procedures had been successful in some instances of preventing leakage during refueling, including during the 2008 Unit 1 outage. Skoyen Rebuttal at A8 and Skoyen Exhibit 16 at 64. However, because these indirect sealing measures had inconsistent results, NSPM performed a comprehensive root cause evaluation from 2008-2009, the results of which permitted isolating and repairing the ultimate leakage sources, so that PINGP has, at present, eliminated 95-97 percent of previous leakage in Unit 1 and 97.5 percent of previous leakage in Unit 2. Skoyen Rebuttal at A8 and Testimony of Steven C. Skoyen on Safety Culture Contention (July 29, 2010) (“Skoyen Testimony”) at A25.
154. Third, the allegation that “after twenty years of leakage, the Applicant still had not identified the exact source of the leak” is inaccurate with respect to both the situation at the time of the ACRS Subcommittee meeting in 2009 and the status of the leakage issue today. At the ACRS meeting, NSPM witnesses stated that NSPM had “high confidence” that the company had identified the exact sources of the leak at that time. Skoyen Rebuttal at A8 and Skoyen Exhibit 16 at 69. A 95 percent or more reduction in leakage following subsequent repairs to the floor embedment plates for the reactor internals stands and the rod control cluster (“RCC”) change fixture confirmed that NSPM had indeed correctly identified these leak sources. Skoyen Rebuttal at A8. The results of testing and repairs lead to the conclusion that the sources of lower cavity leakage, in addition to those mentioned above, are the wall embedment plates for the

RCC assembly guide tube supports, and the source of upper cavity leakage to be the sandplug covers or those of the Nuclear Instrumentation System. Id. and Skoyen Testimony at A24.

155. Fourth, it is misleading to imply that the refueling cavity leakage at PINGP has been “posing a danger to the integrity of the containment.” NSPM has performed repeated inspections from 1998 to 2010, all of which have found no evidence of degradation in the containment vessel, the rebar, or the concrete. In addition, multiple independent engineering evaluations have concluded that potential exposure of the containment vessel and structures to refueling cavity water has not had an adverse impact on their ability to meet design requirements, and that any potential, theoretical degradation would be so limited as to have no safety significance. Skoyen Rebuttal at A8; Skoyen Testimony at A20 and A26; and Skoyen Exhibits 5, 6, and 8.
156. Mr. Grimes’ testimony (A19 at 7-8) on the potential safety risks posed by the refueling cavity leakage is incorrect in a number of respects. First, he states that “[t]he allowable containment leakage for a design basis accident is equivalent to a 0.003 square-inch hole in the containment (about one-sixteenth of an inch in diameter).” This figure, allegedly derived from Appendix H of the Inspection Manual Chapter 0609 (but not found there), is – if at all – a generic value that is not applicable to PINGP, because the units have a dual containment configuration. Skoyen Rebuttal at A9; Skoyen Testimony at A7. Also, a nuclear station’s technical specifications generally identify containment leakage acceptance criteria in terms of a percentage of air weight volume, not a “hole size.” PINGP’s Technical Specifications (Technical Specification 5.5.14.c) establish acceptable criteria as follows: “The maximum allowable primary containment leakage rate, at the containment internal design pressure, shall be 0.25% of primary containment air weight per day.” Skoyen Rebuttal at A9. Also, the NRC has estimated the maximum allowable containment leak rate in accordance with Part 100 dose limits to be approximately equivalent to a hole of 2.5 to 3 inches in diameter for plant containment configurations of the same type as PINGP. Id. and Skoyen Exhibit 17 at 17, n.2.
157. Mr. Grimes’ testimony (A19 at 7-8) also indicates that “[i]f the leakage from the refueling cavity stays in contact with the steel liner and concrete structure for an

extended period, corrosion could eat through the containment liner and weaken the concrete structure to such an extent that, should an accident occur, the containment leakage could result in radiological exposures in excess of 10 CFR Part 100.” This situation would not arise during the license renewal period because the independent engineering evaluation performed by Dominion Engineering, Inc. (“DEI”) in 2009 concluded that the calculated theoretical conservative upper limit of 0.25 inches of corrosion to the steel containment vessel wall “clearly does not raise a risk of causing leakage through the 1.5 in. thick steel containment vessel in the event of an accident.” Skoyen Exhibit 8 at 4-3. The DEI evaluation established that the actual total corrosion after 36 years is 0.010 inches or less. Id. at 4-4. DEI’s conservative assessment, assuming conditions that do not exist (aerated conditions, concentrated boric acid solutions, and no buffering), and taking no credit for the corrective actions already taken to stop the leakage, identified that the upper limit on corrosion would be 0.25 inches after 36 years. Based upon this very conservative analysis, it would take 216 years before corrosion would corrode the full 1.5 inch wall thickness of the containment pressure vessel. Id. and Skoyen Rebuttal at A9.

158. DEI also determined that any degradation effects on the concrete due to contact with refueling water to the maximum postulated depth of 0.31 inches would be “negligible.” Skoyen Exhibit 8 at 5-4 and Skoyen Rebuttal at A9.
159. Recent engineering evaluations performed by NSPM (Skoyen Exhibits 11 and 12) have determined that the DEI evaluation’s conclusions as to the lack of safety significance of the leakage remain valid, and that the DEI evaluation’s postulated maximum degradation levels remain significantly below the design margins required to maintain integrity and functionality of the containment vessel and concrete structures. Skoyen Rebuttal at A9 and Skoyen Testimony at A19.
160. NSPM is committed to ensuring that the leakage has posed will continue to pose no safety risks by conducting further inspections and tests to confirm that no vessel degradation has occurred. Skoyen Rebuttal at A9 and Skoyen Testimony at A20.
161. The assertion in the Grimes testimony (A19 at 8) that “the Applicant did not acknowledge the importance of these problems to aging management until the NRC

audit in the Fall of 2008 – years after the Applicant began efforts to address the problem” is incorrect. PINGP took significant steps to address the refueling cavity leakage and ascertain its safety significance starting in 1998, when it ordered an independent safety evaluation from AES. Despite the evaluation’s conclusion that any leakage effects would have no safety significance, which was again confirmed by AES in 2006, PINGP conducted numerous further tests and implemented a series of repairs to stop the leakage. Skoyen Rebuttal at A10 and Skoyen Testimony at A28.

162. The further assertion in the PIIC SOP at 7 that “the Applicant did not reveal this leakage to the NRC until the fall of 2008, approximately twenty-five years after the Applicant knew about the problem” is also incorrect. Since 1998, PINGP has periodically reported the issue to the NRC by including documentation of refueling cavity leakage, when observed, in its Inservice Inspection (“ISI”) summary reports in accordance with the requirements of 10 C.F.R. § 50.55a. Skoyen Exhibit 4 at 32-33 and Skoyen Rebuttal at A10. In 2008, after NSPM recognized that it had originally failed to include a discussion of observed refueling cavity leakage in its 2006 Unit 2 ISI summary report, it entered a corrective action and duly amended that report to include a discussion of leakage. Id.; Skoyen Exhibit 18 at 1-2. Additionally, PINGP performed a condition evaluation to determine any other instances where leakage was inadequately reported, identifying only one other such instance in 2003. Id.
163. While Mr. Grimes’ testimony (A34 at 15-16) appears to conclude that the refueling cavity leakage issue is an instance where one of the safety culture principles (“[t]he organization ensures that issues potentially impacting safety or security are promptly identified, fully evaluated, and promptly addressed and corrected...”) has not been satisfied, in reality the PINGP Structures Monitoring Program and the ASME Code Section XI, Subsection IWE Program continually involve monitoring the refueling cavity for leakage and evaluating the condition and integrity of containment vessel structures. Utilizing these programs, NSPM originally discovered refueling cavity leakage, conducted prompt and appropriate evaluations and repairs commensurate with the issue’s independently evaluated safety significance, and has planned to conduct further inspections and repairs to ensure no recurrence and no adverse safety

consequences of such leakage. NSPM will not close the open corrective actions regarding the leakage issue until resolution has been achieved and verified. Skoyen Rebuttal at A12.

164. Contrary to the opinion in Mr. Grimes' testimony (A44 at 19-20) that "[T]he failure of the applicant to correct the potential damage to the containment integrity resulting from the refueling cavity leaks . . . [is] indicative of a weak safety culture at PINGP," NSPM has succeeded in identifying and repairing the leak sources, and has substantially eliminated the leakage, and has confirmed that the effects of the leakage pose no risk to the integrity of the containment vessel structures. Moreover, PINGP currently exhibits a strong safety culture that is the result of a strict process-driven approach to handling identified problems under the CAP procedures. Past insufficiencies in accountability at the organizational level have been remedied, such that identified issues are promptly documented, evaluated, assigned to a manager whose level corresponds to the issue's significance, and approved by the Performance Assessment Review Board prior to corrective action closure. Skoyen Rebuttal at A13; Skoyen Testimony at A22 and A23.
165. Also, contrary to the opinion in Mr. Grimes' testimony (A19 at 7) that "Applicant's deficient performance and dereliction of its obligations to promptly and effectively correct deficient conditions call into question the Applicant's ability to effectively implement the aging management program during the period of extended operation," NSPM has been proactive in pursuing multiple avenues to resolve the leakage issue and has repaired the components identified as the source of the leakage. It has also committed to conducting further visual inspections in subsequent refueling outages to ensure that the leakage issue has been fully resolved, and to performing further testing of the integrity of the containment vessel in both units. Skoyen Rebuttal at A14; Skoyen Testimony at A27.
166. Mr. Grimes' opinion is also contrary to that of the Advisory Committee on Reactor Safeguards and the NRC Staff, both of whom have concluded that NSPM's remedial measures and commitments demonstrate its ability to effectively implement the aging management program during the period of extended operation. Skoyen Rebuttal at A14; Skoyen Exhibits 13 and 14 at 3-23.

### C. White Findings

167. Mr. Grimes' testimony (A23 at 9-10) refers to the incident at PINGP in which the instrument manifold isolation valve for the discharge pressure switch of the 11 turbine-driven auxiliary feedwater pump was left out of position (closed instead of open), and cites the conclusions in NRC Information Notice 2009-11 as "further evidence that there is a safety culture at Prairie Island that potentially fails to achieve four of the ten elements of an effective [aging] management program." Mr. Grimes' statement is incorrect for a number of reasons. First, NRC Information Notice 2009-11 (Northard Exhibit 41) mentions several factors as potentially being the causes of configuration control errors, but does not state that any of the factors was involved in the incident at PINGP. In fact, the causal factors to which Mr. Grimes refers appear in a section of the Information Notice discussing mispositioning events at eighteen other plants (see Northard Exhibit 42). Therefore, associating any of the factors with the incident at PINGP is incorrect. Joint Direct Testimony at A96; Joint Rebuttal Testimony of Scott Northard, Kurt W. Petersen and Ed M. Peterson II on Safety Culture Contention ("Northard Rebuttal") at A11; Northard Exhibits 41 and 42.
168. Also, Mr. Grimes refers to four of the elements of an effective license renewal program defined in the Standard Review Plan for License Renewal (NUREG-1800). None of those elements were violated in the switch mispositioning incident. To the contrary, NSPM's corrective actions were thorough and prompt and were verified to be complete and effective; a comprehensive root cause evaluation was promptly made; no failure to provide formal reviews and approvals was identified among the root causes of the incident; and no operating experience was cited as being relevant to the incident. Northard Rebuttal at A11; Joint Direct Testimony at A33 and A34, and Northard Exhibit 15.
169. In reality, PINGP has programs and procedures in place to satisfy the ten elements of an effective license renewal program defined by NUREG-1800. These programs and procedures were presented in the License Renewal Application and were reviewed and confirmed by the NRC to be adequate. Northard Rebuttal at A11 and Northard Exhibit 43 (SER Section 3.0.4).

170. The statement in Mr. Grimes' testimony (A32 at 15) that PINGP knew of the high energy line break ("HELB") issue for many years but limited its evaluation of the issue to the auxiliary building and missed the turbine building is inaccurate. PINGP knew of the need to perform a HELB evaluation for the turbine building for several years, but did not sufficiently prioritize performing such an evaluation, partly because of the non-safety related nature of the equipment in the turbine building and the lack of expectation that a HELB there would have adverse safety consequences. While this expectation was erroneous, PINGP did not "miss" the potential for a HELB but failed to act on it expeditiously. Northard Rebuttal at A12; Joint Direct Testimony at A53, and Northard Exhibit 19 at 6-7.
171. The statements in PIIC's SOP at 7 and Mr. Grimes' testimony, A44 at 20, that the White Finding on the Unit 2 Component Cooling Water ("CCW") system vulnerability was a failure to design the CCW system such that it would be protected from turbine building flooding effects are incorrect. The condition leading to the issuance of a White Finding was that a postulated failure of a turbine building high energy piping line could sever the adjacent CCW piping, thereby impacting the continued operability of the Unit 2 CCW system. The White Finding has nothing to do with designing the CCW piping to withstand seismic or tornado events, and the White Finding does not relate to flooding effects. Northard Rebuttal at A13; Joint Direct Testimony at A49, and Northard Exhibit 19 at 18.
172. The NRC has subsequently identified a preliminary, potentially greater-than-Green Finding regarding the protection of safety-related systems from flooding effects in the turbine building. This potential Finding arises from the potential severance of Cooling Water piping as a result of an HELB, but is separate from the White Finding to which Mr. Grimes refers and is still under consideration by the NRC Staff. It is NSPM's position that the PINGP has always been and remains in compliance with all NRC regulations regarding internal flooding in the turbine building, and the plant is also in compliance with its licensing basis. Nonetheless, NSPM has implemented a series of measures to improve the plant's ability to address beyond-design-basis flooding events. The NRC has not made a final determination whether there should be a Finding

associated with the potential flooding issue and, if so, whether it should be a Green or greater-than-Green Finding. Northard Rebuttal at A13 and Northard Exhibits 44 at 5-7 and 45.

173. The inference that is drawn in Mr. Grimes' testimony (A33 at 15 and A34 at 16) that the issuance of the White Findings is indicative of a substantive cross-cutting issue in the area of human performance and thus a safety culture weakness is erroneous. The issuance of a White Finding only refers to an event's perceived safety implications and is not in itself indicative of the existence of human performance issues or of a deficiency in the safety culture at the facility involved. The fact that the NRC September 21, 2009 mid-year assessment letter mentions both the White Findings that had been issued and the existence of a substantive cross-cutting issue in the area of human performance is a happenstance. The determination made on that letter of the existence of a substantive cross-cutting issue in the area of human performance related to the existence of "25 findings documented with cross-cutting aspects in the HP area," and not to the White Findings as such. See Northard Exhibit 21 at 2. To the extent that some of the PIGNP White Findings included human performance issues as part of their cause, those issues were adequately addressed as part of the corrective actions to address the Findings. Northard Rebuttal at A14; Joint Direct Testimony at A29, A45, A46 and A54-A57, and Northard Exhibit 21.
174. The observation in Mr. Grimes' testimony (A27 and A28 at 12-13) that the White Findings resulted in PINGP being placed in the Regulatory Response column of the NRC Action Matrix does not indicate a deficient safety culture at PIGNP or a lack of reasonable assurance that NSPM will meet its regulatory commitments. Since Mr. Grimes acknowledges that ten to twenty percent of the operating reactors are currently in the Regulatory Response column, if being in the Regulatory Response column reflected a situation where the NRC lacked reasonable assurance of safe operation or regulatory compliance, these plants would be shut down. In point of fact, since the reactor oversight process ("ROP") began in 2000, approximately 90% of all operating units have been in the Regulatory Response column at some point. Further, over a third of the operating units have been in the Degraded Cornerstone column or the

Multiple/Repetitive Degraded Cornerstone column. PINGP Units 1 and 2 have never been in the Degraded Cornerstone column or the Multiple/Repetitive Degraded Cornerstone column. Northard Rebuttal at A15.

175. The assertions in Mr. Grimes' testimony (A34 at 15-16) that the NRC's determination that substantive cross-cutting issues ("SCCI") existed at PINGP is indicative of a weak safety culture and casts into doubt NSPM's ability to resolve potentially risk-significant deficiencies associated with long-term, age-related degradation are incorrect. The NRC has found SCCI at about 45% of all operating units. If a finding of SCCI indicated a lack of reasonable assurance that a licensee would operate its plant safely or fulfill its regulatory commitments, then 45% of the plants operating in the U.S. would have been ordered to be shut down by the NRC in the last five years. Obviously, that is not the case. Id. at A16.

#### **D. Human Performance Issues**

176. Mr. Grimes' testimony (A42 at 18-19) references certain statements in the March 2010 Annual Assessment Letter issued by the NRC as indicating that "NSPM has yet to demonstrate to the NRC inspectors that the human performance weaknesses have been corrected." However, while the NRC recognized that measures to improve human performance had been instituted, their results had not been entirely evident by the time the NRC made the inspection on which the 2010 Annual Performance Assessment is based. Northard Rebuttal at A17 and Joint Direct Testimony at A66-71.
177. After the Annual Performance Assessment was issued in March 2010, NSPM continued to implement the human performance measures it had instituted after the 2009 mid-year performance assessment by the NRC and took a series of additional steps in response to the Annual Assessment. These measures have resulted in human performance improvements whose effectiveness can be assessed based on several objective performance indicators, including a reduction in the frequency and severity of human performance-related events, an improving trend in the number of NRC violations, and other favorable metrics. Northard Rebuttal at A17 and Joint Direct Testimony at A72, A74 and A75.

178. Mr. Grimes' testimony (A42 at 19) quotes a portion of the summary from the minutes of the March 17 and 18, 2010 meeting of the PINGP Management Safety Review Committee, which states that "[m]oving Prairie Island solidly forward with the large scope of work on its plate will be determined by the strength and consistency of Station leadership. The leadership team – senior executives through first line supervisors – must continue stepping up the level of engagement with the workforce. Much of what ails Prairie Island is deeply imbedded in its culture. Actions taken at both site and Fleet levels to strengthen the leadership team are vital and will be followed closely by the Committee." The PINGP Management Safety Review Committee ("MSRC") meets three times a year to gather work force perspectives on the plant's performance, challenges and attitudes that affect the safe operation of the plant. The March 2010 meeting referenced in Mr. Grimes' testimony concluded that the plant continues to operate safely, but that additional engagement by management personnel is necessary to continue to improve performance. Although the minutes identify a number of areas where senior management attention was required, the MSRC did not indicate that the overall safety culture at PINGP is defective. Northard Rebuttal at A18 and Northard Exhibit 46.
179. In fact, the MSRC minutes are a good indication of the importance that NSPM places on human performance and culture. The MSRC is chaired by former NRC Regional Director Hub Miller, and includes former NRC Executive Director of Operations Joe Callan as a member, as well as other senior NSPM and industry executives. Their quarterly reviews providing probing advice that helps PINGP in performance improvement initiatives and pursuit of excellence. This advice includes being very blunt in identifying those areas that deserve continued management attention. Northard Rebuttal at A18.
180. Mr. Grimes' testimony expresses the opinion (A44 at 19) that "[t]here is a pattern of cultural performance issues revealed by the continuing human performance (HP) and problem identification and resolution (P&IR) issues at Prairie Island that go too deep to be addressed by a simple follow-up inspection. As described in the NRC's most recent Annual Assessment Letter, the Applicant must demonstrate that the cultural corrective

measures are both effective and sustainable.” That opinion, however, is erroneous. Human performance issues at PINGP have been addressed through a variety of initiatives which, in total, are producing measurable improvements in human performance. Those improvements demonstrate that the actions taken by NSPM are effective and will result in sustained human performance gains. Northard Rebuttal at A19.

#### **E. 2008 Safety Culture Assessment**

181. Mr. Grimes’ testimony (A36 at 16-17) references an August 2008, USA safety culture assessment which found that a culture of prevention has not been embraced at PINGP. Mr. Grimes adds that “[a]s noted by the USA ‘self-assessment’ team, ‘prevention’ is an item that provides a foundation for much of nuclear safety culture.” These references, however, do not signify that safety culture weakness exist at PINGP. The 2008 USA Assessment team apparently recognized that “prevention” is not in itself an element of safety culture, although it “correlates” with INPO Principle 7 (“organizational learning is embraced”). With respect to INPO Principle 7, the 2008 Assessment Team found that “Overall performance under Principle 7 was adequate” and that operating experience (“OE”) OE is valued and utilized. Additionally, OE is accessed from many different sources.” Northard Rebuttal at A20 and Northard Exhibit 47 at 34.
182. More significantly, the overall conclusion of the 2008 USA Assessment was that “Overall, the assessment team concluded that PINGP personnel have a healthy respect for nuclear safety and nuclear safety is not compromised by production priorities. In addition, PINGP overall met expectations in each of the eight Principles for a Strong Nuclear Safety Culture.” Id.
183. Several specific backlog reduction efforts were initiated since 2009 at the station. These include reducing the corrective maintenance work order backlog from 42 to 3, reducing the elective maintenance work order backlog from 964 to 865, and reducing the CAP backlog from 2331 to 2173 since the beginning of 2010. Similar backlog reduction efforts are underway for Procedure Change Requests and Engineering Change Requests. Northard Exhibit 48. These backlog reduction efforts evidence NSPM’s growing focus on prevention. Northard Rebuttal at A20.

184. No evaluation of a plant's safety culture has concluded that the plant's safety culture is perfect and there are no areas for improvement. Deficiencies in particular areas, such as prevention, are important in identifying where the plant's management and staff should concentrate their future efforts, but do not signify that a plant's safety culture is deficient. Id.
185. Mr. Grimes' testimony (A36 at 16-17) also states that plant employees interviewed as part of the 2008 USA Assessment indicated that they do not have time to be proactive and as a result always seem to be in the reactive mode. That perception, however, reflects the employees' concern that they have too much to do, a concern that is based on the fact that PINGP employees are driven to fix all identified problems. However, PINGP uses a graded approach to its evaluation of identified problems, whereby problem evaluations are prioritized on the basis of their significance and the scheduling of individual responses reflects that prioritization. The particular issue that an employee identifies may not be addressed as early or in as detailed fashion as those with greater significance. Northard Rebuttal at A21 Joint Direct Testimony at A76, A84 and A94.
186. To address this employee perception NSPM provided increased training on both Root Cause and Apparent Cause Evaluations. The training provided and reinforced the requirement to analyze and prioritize the development of corrective actions to resolve identified problems. Therefore, the 2008 employee comments were based on past practices and do not reflect the increased management oversight of the CAP process, particularly in the review of evaluations and corrective actions. Northard Rebuttal at A21.
187. PINGP has focused on work schedule stability, and has achieved greater than 80% stability for the past four months. This is an indicator that PINGP employees can have more predictability in their execution of work activities, which provides more opportunities to be proactive. Additionally, the Site Vice President has provided direction on what are the areas into which station activities should be focused. This focusing also results in improving the employees' ability to be proactive. Id.

188. The 2010 PINGP NSCA Safety culture assessment did identify employee's concerns with some processes including issues with efficiencies, timeliness, and effectiveness. The assessment also identified that employees desire better communication and interaction with the leadership team. However, from a nuclear safety culture perspective, the assessment concluded that the PINGP nuclear safety culture supports all of the INPO *Principles for a Strong Nuclear Safety Culture* and has a healthy respect for nuclear safety. Additionally, interviews conducted during the assessment demonstrated that Prairie Island personnel feel that they can raise any nuclear safety concern, without fear of retaliation. Id.
189. The Pre-assessment Survey demonstrated strong engagement by the work force in that 88% of the population participated in providing feedback to the survey questions. The 2010 survey response rate is a significant improvement over the 2008 response rate which was 40%. Based on the Pre-assessment Survey and the Interviews with employees, three positive observations were identified that relate to current employee perceptions of nuclear safety culture: (a) Most employee responses in both vertical and horizontal demographics from both the pre-assessment survey and the interviews strongly supported that responsibility and authority for nuclear safety are well established. (b) The interview and survey results demonstrated that on an individual level, most plant employees have a healthy respect for nuclear technology and nuclear safety. They understand their role in promoting nuclear safety and how their actions impact nuclear safety. In many instances, personnel could directly describe how their job responsibilities impacted nuclear safety. (c) Most station personnel believe that nuclear safety culture has improved over the last two years.
190. Mr. Grimes' testimony (A38 at 17) references a "Stand-Down" held by NSPM management on January 5, 2009 and a "Required Briefing by Department Managers," both of which Mr. Grimes interprets as a recognition that safety culture weaknesses that exist at PINGP. However, the briefings would report the positive and negative findings reported in the 2008 USA assessment as a way to inform the plant personnel of the results of the assessment, and would seek to increase the awareness of all plant personnel of the actions that they should be taking to enhance safety culture. Holding

such a briefing is in fact a very good example of the importance that NSPM management places on safety culture, and its efforts to ensure that guiding principles are continuously communicated and reinforced. Such a briefing is an appropriate activity for plant management to undertake to satisfy INPO Principle No. 2, that is: “Leaders demonstrate commitment to safety.” It is also an activity taken by an organization which is always seeking to improve its safety culture, regardless of where it currently lies. In fact, striving towards continuous improvement is a sign of a strong safety culture. Northard Rebuttal at A22-A24 and Northard Exhibit 49.

191. The PIIC SOP at 8 cites the Nuclear Oversight Assessment that the Applicant performed in the first quarter of 2010 as stating that “[t]he station has two Cultural Behaviors that are challenging the station from reaching industry excellence in performance. They are a culture of recovery rather than prevention and a culture of informality with processes, procedures, and plant evolutions” and explaining that the “the mindset that the station can fix or detect an adverse condition after it occurs has been reinforced and in some cases rewarded.” However, the quoted statements do not relate to the status of the safety culture at PINGP. One of the functions of the Nuclear Oversight Department is to identify what gaps exist between PINGP performance, even if acceptable, and industry leading (*i.e.* excellent) performance. PINGP recognizes that in order to continually improve performance, goals must be set at levels of excellence rather than at just meeting expectations. The Nuclear Oversight department performs the function of identifying the best industry practices and communicating them to the employees. Northard Rebuttal at A25.
192. Consistent with NSPM’s strong commitment to nuclear safety and safety culture, when such behaviors (or any weakness) are identified, NSPM communicates them in a very blunt, self critical manner, so that they get the corrective action that they deserve. This ability to be extremely self critical, and to identify and communicate areas for improvement in no uncertain terms, is in fact a fundamental characteristic of a strong safety culture. *Id.*
193. Several initiatives have been taken or are underway to make a shift in station practices from recovery to prevention. These include rewarding employees for “Risk Prevention,”

a station “Good Catch” program, and a monthly recognition luncheon for employees who are nominated by their supervisors for exemplary performance, including finding and fixing adverse conditions. Id.

194. Notable improvements in the CAP program have been recognized by Nuclear Oversight. Statements to that effect include: “Significant initiatives have been leveraged in the area of the Corrective Action Program. These have mostly been changing the process, changing representation at meetings, challenging the previous standards and training. These have resulted in improvements in the program, especially with PARB [Performance Assessment Review Board] and TRP [(Technical Review Panel] holding to higher standards than previously achieved.” Id. and Northard Exhibit 50 at 31. These statements by the Nuclear Oversight Department demonstrate several characteristics of a positive safety culture, as the term is defined in the draft NRC statement. Northard Rebuttal at A25.

#### **F. Corrective Action Program**

195. Mr. Grimes’ testimony (A35 at 16) references an NRC December 21, 2007 Problem Identification and Resolution (“PI&R”) Inspection Report as noting a common theme during the last four PI&R inspection reports, i.e., that the licensee tended to focus on detecting problems rather than preventing problems. This observation by the NRC, however, does not reflect negatively on the PINGP’s safety culture because in the same report the NRC concluded that the licensee “has made progress in effectively using operating experience at the station to prevent problems. In addition, nuclear oversight department personnel’s insights and assessments results have been instrumental in improving station performance and reflected a positive presence in the further enhancement of station’s performance.” Northard Exhibit 51 at 2. These conclusions support a finding of strength in the safety culture at PINGP rather than a weakness. Northard Rebuttal at A26 and Northard Exhibit 51.

196. The 2007 NRC comments reflect where PINGP was at that point in time on the safety culture assessment continuum. Since then, PINGP has made progress in addressing the issue of prevention vs. recovery as part of the evaluation of issues. The NRC noted this in its 2009 PI&R inspection report, stating: “Most issues, including operating

experience, were properly evaluated commensurate with their safety significance; and corrective actions were generally implemented in a timely manner, commensurate with the safety significance.” Northard Rebuttal at A26 AND Northard Exhibit 36 at 1.

197. The in-depth evaluation of issues requires explicit consideration Extent of Condition and Extent of Cause. The Extent of Condition and Extent of Cause evaluations provide the forcing function that permits implementing a preventative approach to analysis rather than performing narrow evaluations of the specific conditions and the required corrective actions to address them. Northard Rebuttal at A26.
198. Mr. Grimes’ testimony (A40 at 17-18) states that in its September 25, 2009 PI&R Inspection Report the NRC noted that the Corrective Action Program at PINGP was “functional” but implementation was lacking in rigor resulting in inconsistent and undesirable results, and that the NRC inspectors also noted that “the backlog of corrective actions was large and growing.” However, that PI&R Report also presented a number of favorable conclusions regarding the PINGP CAP, supporting the overall determination that “in general, problems were properly identified, evaluated, and corrected.” Northard Exhibit 36, cover letter at 1. Thus, the concerns cited in Mr. Grimes’ testimony are only part of the overall picture and do not represent the NRC’s total assessment of the CAP program at the time of the 2009 PI&R inspection. Northard Rebuttal at A27; Joint Direct Testimony at A84 and Northard Exhibit 36.
199. The concerns raised by the NRC in the 2009 PI&R inspection refer to issues that had previously been recognized by PINGP, and two Action Requests (AR) had been generated in May 2009 to address them; a root cause evaluation (RCE) of the CAP problems had also been issued and corrective actions were being taken to address its recommendations. The NRC inspectors agreed with the conclusions in the RCE and acknowledged that PINGP has implemented improvement programs and efforts toward improving the CAP, although recognizable improvement in most areas had not been observed. This is attributable to the fact that at the time the inspection was performed (August 2009) implementation of the improvement programs was only in its initial stages. Northard Rebuttal at A27; Joint Direct Testimony at A84; Northard Exhibits 34, 37 and 38.

200. Mr. Grimes' testimony concludes (A442 at 20), based on the NRC's PI&R Report, that "the serious concerns identified by NRC inspectors with the applicant's corrective action program . . . are indicative of a weak safety culture at PINGP." This conclusion is erroneous because the NRC's PI&R Report found that the CAP was acceptable. Also, the NRC inspectors reviewed the 2008 USA safety culture assessment and commented favorably on PINGP's Employees Concern Program based on that assessment. Northard Exhibit 36 at 17. Other than that, the inspectors made no observations regarding PINGP's safety culture. Northard Rebuttal at A28; Northard Exhibit 36.
201. Moreover, the conditions that the NRC identified in its September 25, 2009 report represented a backwards look into the CAP program. These conditions do not represent the current situation at PINGP. The station has taken actions that demonstrate recognition of the importance of the corrective action program and have strengthened the program. Northard Rebuttal at A28; Joint Direct Testimony at A87.
202. The PIIC SOP (at 8-9) refers to an assessment of the CAP in 2009 conducted by PINGP that found that the station was adequately implementing the CAP but allegedly reached the conclusion that "[t]he site believes that failure to achieve effective and timely problem resolution is due to inadequate program management and a weak safety culture." However, the assessment (the CAP RCE) does not contain the quoted language. A similar quote in the RCE reflected the reviewing team's concern expressed in that quote was that the program management was not adequately enforcing the CAP program, which therefore could impact PINGP's nuclear safety culture. NSPM acknowledged this comment and took prompt, definitive action thru management engagement, reinforcement and feedback of not only the value of the CAP program, but enforcing a quality product (both evaluation and corrective actions). Additionally, one of the PINGP Focus Areas for 2010 is the Corrective Action Program. Northard Rebuttal at A29; Northard Exhibits 34 and 52.
203. The second similar quote references deficiencies in sequencing or prioritization of corrective actions, which do not take into account the issues' significance. Actions

were developed and executed to address this concern, which is no longer current. Northard Rebuttal at A29.

204. Mr. Grimes' testimony (A44 at 19-20) provides the following opinion: "[T]he safety culture weaknesses associated with the causal factors described in Information Notice 2009-11, the series of White Findings associated with one or both of the PINGP units, the identification of substantive cross-cutting issues in the area of human performance, the serious concerns identified by NRC inspectors with the applicant's corrective action program, and failure to effectively manage the plant design and effectively resolve potentially the safety-significant flooding issues identified 20 years ago, are indicative of a weak safety culture at PINGP." This opinion, however, is unfounded and erroneous. All the issues that Mr. Grimes cites have been addressed and programs have been set in place to improve the aspects of plant performance relating to those issues. Significant improvement in performance is indicated in the various metrics used to track organizational and individual performance, including both nuclear and industrial safety. Employees have continually shown a willingness to identify and correct performance deficiencies, and to change their behaviors as needed to improve work task execution. And, finally, PINGP has demonstrated that a reduction in the number and significance of employee errors is continuing. Northard Rebuttal at A31; Joint Direct Testimony at A99.
205. NSPM has also demonstrated through various independent assessments, audits, surveys, causal evaluations and through examination of the performance history that there is a strong safety culture at PINGP. Id.

#### **G. Required Actions re Safety Culture**

206. Mr. Grimes' testimony (A45 at 20) recommends that the NRC "direct the applicant to conduct a third party assessment of safety culture as described in Section 10.02 of NRC Inspection Manual Chapter 0305. After the review of this third party assessment, the NRC can address what corrective actions by the applicant are necessary before the renewal should be granted." Therefore, the NRC Inspection Manual neither requires nor expects that that such an assessment be made at PINGP, because the direction to conduct a third party assessment applies only if a licensee has been placed in the

“multiple/repetitive degraded cornerstone column” (Column 4), which does not apply to PINGP, or if in there is a third consecutive assessment letter identifying the same substantive cross-cutting issue with the same cross-cutting aspect, which again does not apply to PINGP. Northard Rebuttal at A30 and Northard Exhibit 20 at 22 and 44.

207. In addition, a USA Assessment of safety culture at PIGNP was performed in 2010. This recent assessment concluded that “the PINGP nuclear safety culture supports all of the INPO *Principles for a Strong Nuclear Safety Culture* and has a healthy respect for nuclear safety. Additionally, . . . Prairie Island personnel feel that they can raise any nuclear safety concern, without fear of retaliation.” Therefore, the remedy that PIIC asks for, performance of a safety culture assessment, has already been provided. Northard Rebuttal at A30; Joint Direct Testimony at A92; Northard Exhibit 39.
208. The PIIC SOP states at 9-10: “The Community would ask the Board to deny the application for license renewal until the Applicant can demonstrate that the safety culture inadequacies have been fixed – not that they will be fixed, but they have been fixed.” PIIC’s request for relief ignores that safety culture is not a static concept but, as defined by the NRC, is an “assembly of characteristics, attitudes, and behaviors in organizations and individuals, which establishes that as an overriding priority, nuclear safety and security issues receive the attention warranted by their significance.” Because safety culture is dynamic and unquantifiable, it is impossible to try to demonstrate at any point in time that the safety culture at a facility has been “fixed.” Northard Rebuttal at A32.
209. PIIC’s Safety Culture Contention, and the testimony that supports it, totally ignore the role of the NRC in continuously monitoring NSPM’s performance in areas that have a bearing on PINGP’s safety culture. The NRC’s constant supervision of activities at the PINGP through the reactor oversight process assures that if any plant performance deficiencies with safety culture implications develop, the NRC will require that the deficiencies be corrected and their safety culture implications be addressed. Id.
210. Nuclear safety culture is defined by both the NRC and INPO. Consistent in these definitions is the fact that culture is a set of organizational values, behaviors, and attitudes that collectively result in the establishment of nuclear safety as an overriding

priority. It is these values, behaviors and attitudes that influence the performance of a worker, a group of workers, an organization, and the entire work force. Nuclear safety culture then can be measured by collectively determining the values and attitudes of the workers through surveys and interviews and by evaluating various elements of station performance. Behaviors and attitudes influence and are reflected in performance, which is measured at the individual level, the group level, the organizational level, and the station level. Continuous improvement in pursuit of excellence is a standard expected by both the regulatory and industry oversight agencies. The basic model for continuing performance improvement includes three primary actions: Performance Monitoring, Analyzing, Identifying and Planning Solutions, and Implementing Solutions. These actions are continuous, in an ongoing, continuous circle. It is recognized that not all corrective actions are effective (either on a short-term or long-term basis) and continuous checking and adjustment are necessary. Id. and Northard Exhibit 53 (INPO Guidelines for Performance Improvement at Nuclear Power Stations).

211. Moreover, demonstrating that the safety culture of a plant has been “fixed” at this point in time would be of little value in predicting the culture’s status years into the future. There are many external and internal factors that may change the safety culture over time. The occurrence and impact of these factors are difficult to predict, thus it is unlikely that the PINGP’s current safety culture can serve to accurately predict its future performance. Northard Rebuttal at A32.
212. PINGP cannot demonstrate that all inadequacies “have been fixed” but the station has demonstrated that programs and processes are in place which meet the NRC regulations for correction of non-conforming and degraded items and for correction of conditions and significant conditions adverse to quality. Additionally, the station implements a continuous process similar to the INPO model that provides ongoing performance

monitoring, solution development and implementation of all issues identified, including safety culture inadequacies. Id.

Respectfully Submitted,

/Signed electronically by Matias F. Travieso-Diaz/

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Dated: August 13, 2010